



Space Weather Initiatives at the UN Committee on the Peaceful Uses of Outer Space

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Space Weather: An Inherently International Enterprise



- Space weather phenomena and impacts have no regard for national boundaries
- Not feasible for one single country to do all the research or provide all the operational services forever
- Strong international cooperation exist at various levels, including under the UN auspices:
 - COPUOS
 - WMO
 - ICAO

UN Committee on the Peaceful Uses of Outer Space (COPUOS)

<http://www.unoosa.org/oosa/en/COPUOS/copuos.html>

- Set up by and reports to UN General Assembly
- Now 76 Member States and about 30 permanent observers (intergovernmental and non-governmental organizations including WMO, ESO, SCOSTEP, etc)
- Works on basis of consensus to:
 - Promote information sharing and international cooperation in peaceful uses and exploration of outer space under UN auspices
 - Study legal matters related to the use and exploration of outer space.

UN Committee on the Peaceful Uses of Outer Space (COPUOS)

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- Two standing Subcommittees:
 - Scientific and Technical Subcommittee (STSC);
 - Legal Subcommittee (LSC).
- Current agenda topics: space applications for sustainable development, GNSS, space-based disaster management, near-Earth objects, long-term sustainability of space activities, space debris, space weather, etc.

COPUOS and Space Weather

- Increased awareness among policy makers, diplomats, scientists, and emergency planners and responders
- Promotes policy discussion and international cooperation in space weather research, capacity building, and societal resilience against space weather hazards
- Activities:
 - International Heliophysical Year, 2007-09
 - International Space Weather Initiative, 2009-12 (and continuing)
 - Regular STSC agenda item on space weather, 2013 onward

International Space Weather Initiative (ISWI)

- <http://www.iswi-secretariat.org/>
<http://www.unoosa.org/oosa/en/SAP/bss/iswi.html>
- Program of international cooperation to advance space weather science:
 - Instrument deployment – now 1000 instruments (17 arrays) in 100 countries
 - Instrument arrays: magnetometers, radio antennas, GPS receivers, all-sky cameras, particle detectors
 - Data analysis and modeling
 - Scientific workforce training and capacity building
 - Outreach to the public and students.
- Next: collate and disseminate data, answer science questions, modeling, etc.



COPUOS STSC Space Weather Agenda Item

- Became a regular STSC agenda item in February 2013
- Recognizes importance of SW to space activities, economy, security and well-being of all humankind
(alongside space debris and near-Earth objects)
- Through statements and discussions, member states and observers can :
 - Exchange views on national, regional and international activities related to space weather science, services, and outreach
 - Share information about impacts of space weather on space systems and society
 - and ..

COPUOS STSC Space Weather Agenda Item



- advocate for international cooperation and coordination:
 - to close gaps in space weather observations and research (and R2O?)
 - to coordinate space- and ground-based assets for observing and monitoring SW
 - to improve services - e.g. predictions of space weather events
 - to enhance preparedness and build resilience of space-based infrastructure to build capacity, focusing on developing countries
- During STSC 2014: U.S. organized two-day expert meeting on improving space weather forecasting in the next decade.

Long-Term Sustainability of Outer Space Activities (LTS)



- LTS Working Group (established 2010, chaired by Peter Martinez of RSA):
 - Consider practices, technical standards and policies relevant to sustaining space environment and space activities through all phases of mission life cycle.
 - Develop voluntary best practice guidelines to enhance LTS of outer space activities for all space actors and all who benefit from space activities.
 - 4 expert groups (1 on space weather) provided technical input and recommendations of candidate guidelines for WG consideration
 - Space weather expert group (co-chairs T. Obara and I. Mann) submitted final report at STSC 2014. Report focused on reducing adverse risks of space weather on operational space systems
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Draft Guidelines Proposed in Final Report by Expert Group on Space Weather

1. Support and promote the collection, archiving, sharing, intercalibration, and dissemination of critical space weather data.
2. Support and promote further coordinated development of advanced space weather models and forecasting tools in support of user needs.
3. Support and promote the coordinated sharing and dissemination of space weather model outputs and forecasts.
4. Support and promote the collection, sharing, and dissemination of and access to information relating to best practices for mitigating the effects of space weather on terrestrial and space-based systems and related risk assessments.
5. Promote the education, training and capacity building required for a sustainable global space weather capability.

COPUOS LTS WG: Current Status

- Fall 2013: Compilation of draft set of guidelines (verbatim) from expert groups - addressing policy, regulatory, scientific, technical and management aspects. Available in all UN official languages. (English: http://unoosa.org/pdf/limited/c1/AC105_C1_L339E.pdf)
- Feb 2014: Negotiation at inter-governmental (WG) level started to consolidate guidelines
- June 2014: WG chair's proposal for the consolidation of the set of draft guidelines, for consideration by COPUOS
- Main output (Feb 2015?): report and consensus voluntary best practice guidelines to enhance long-term sustainability of outer space activities for all space actors and those who benefit from space activities.

How You Can Contribute Expertise and Information

- ISWI - Talk with Lika Guhathakurta and Nat Gopalswamy
- LTS: Support your national delegations with technical advice as draft guidelines are negotiated in the Working Group. LTS POCs:
http://unoosa.org/pdf/limited/c1/AC105_C1_2014_CRP18E.pdf
- SW agenda item: Contribute expertise to your delegation's SW statement/contribution
 - Participant list:
http://unoosa.org/pdf/reports/ac105/C1/AC105_C1_2014_INF43.pdf

THANK YOU!